

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of the Claims:

1 Claim 1 (currently amended): A method of joining ~~plastics~~
2 workpieces comprising:

3 a) creating a first surface diffusion zone containing
4 therein a first polymerizable material, wherein said first
5 surface diffusion zone is adjacent to a first surface of a
6 first workpiece within said first workpiece; and,

7 if present, removing excess of said first polymerizable
8 material from said first surface; and,

9 b) creating a second surface diffusion zone containing
10 therein a second polymerizable material, wherein said second
11 surface diffusion zone is adjacent to a second surface of a
12 second workpiece within said second workpiece; and,

13 if present, removing excess of said second
14 polymerizable material from said second surface, and wherein
15 said first polymerizable material and said second
16 polymerizable material are capable of bonding with each
17 other; and,

18 c) bringing said first surface and said second surface
19 into intimate contact at a bonding surface; and,

20 d) causing said first polymerizable material and said
21 second polymerizable material to react and join across said
22 bonding surface.

1 Claim 2 (currently amended): A method of joining ~~plastics~~ as
2 in claim 1 wherein at least one of said first surface or
3 said second surface has at least one microfeature therein.

Claim 3 (canceled)

1 Claim 4 (currently amended): A method of joining ~~plastics~~ as
2 in ~~claim 3~~ claim 1 wherein at least one of said first
3 workpiece or said second workpiece is selected from the
4 group consisting of polyimides, polyetherketones,
5 polyetherimides, polyphenylenes, and polyether-ether-
6 ketones.

1 Claim 5 (currently amended): A method of joining ~~plastics~~ as
2 in claim 4 wherein said first workpiece and said second
3 workpiece are polyphenylenes and said first polymerizable
4 material and second polymerizable material are mixtures of
5 styrene and divinylbenzene.

1 Claim 6 (currently amended): A method of joining ~~plastics~~ as
2 in claim 5 wherein both of said mixtures have a ratio of
3 approximately 9:1 by volume of styrene to divinylbenzene.

1 Claim 7 (currently amended): A method of joining ~~plastics~~
2 workpieces comprising:

3 a) creating a first surface diffusion zone containing
4 therein a polymerizable material, wherein said first surface
5 diffusion zone is adjacent to a first joining surface of a
6 first workpiece within said workpiece and, if present,
7 removing excess of said polymerizable material from said
8 first joining surface; and,

9 b) providing a second workpiece having a second
10 joining surface; and,
11 c) bringing said first joining surface and said second
12 joining surface into intimate contact at a bonding surface;
13 and,
14 d) causing said polymerizable material to react and
15 join across said bonding surface.

1 Claim 8 (currently amended): A method of joining ~~plastics~~ as
2 in claim 7 wherein at least one of said first joining
3 surface or said second joining surface has at least one
4 microfeature therein.

Claim 9 (canceled)

1 Claim 10 (currently amended): A method of joining ~~plastics~~
2 as in ~~claim 9~~ claim 7 wherein at least one of said first
3 workpiece or said second workpiece is selected from the
4 group consisting of polyimides, polyetherketones,
5 polyetherimides, polyphenylenes, and polyether-ether-
6 ketones.

1 Claim 11 (currently amended): A method of joining ~~plastics~~
2 as in claim 10 wherein said first workpiece is a
3 polyphenylene, said second workpiece is a polyetherimide
4 and said polymerizable material is styrene.

Claims 12-21 (canceled)

1 Claim 22 (new): A method of fabricating a microfluidic
2 device comprising:

3 creating a first surface diffusion zone containing
4 therein a first polymerizable material, wherein said first
5 surface diffusion zone is adjacent to a first surface of a
6 first workpiece within said first workpiece; and,
7 if present, removing excess of said first polymerizable
8 material from said first surface; and,
9 creating a second surface diffusion zone containing
10 therein a second polymerizable material, wherein said second
11 surface diffusion zone is adjacent to a second surface of a
12 second workpiece within said second workpiece; and,
13 if present, removing excess of said second
14 polymerizable material from said second surface; and,
15 wherein said first polymerizable material and said
16 second polymerizable material are capable of bonding with
17 each other; and,
18 wherein at least one of said first surface and said
19 second surface has one or more microfluidic features
20 therein; and,
21 bringing said first surface and said second surface
22 into intimate contact at a bonding surface so as to form a
23 microfluidic device; and,
24 causing said first polymerizable material and said
25 second polymerizable material to react and join across said
26 bonding surface, creating thereby a microfluidic device.

1 Claim 23 (new): A method of fabricating a microfluidic
2 device comprising:

3 creating a first surface diffusion zone containing
4 therein a first polymerizable material, wherein said first
5 surface diffusion zone is adjacent to a first joining
6 surface of a first workpiece within said first workpiece;
7 and,

8 if present, removing excess of said first polymerizable
9 material from said first joining surface; and,
10 providing a second workpiece having a second joining
11 surface; and,
12 wherein at least one of said first joining surface and
13 said second joining surface has one or more microfluidic
14 features therein; and,
15 bringing said first joining surface and said joining
16 second surface into intimate contact at a bonding surface so
17 as to form a microfluidic device; and,
18 causing said polymerizable material to react and join
19 across said bonding surface, creating thereby a microfluidic
20 device.